

Office of Workforce Development for Teachers and Scientists



FUTURE WORKFORCE STRATEGY



November 2007



A Message from the Under Secretary for Science

The Department of Energy's Office of Science is among the world's premier supporters of basic research. The Office of Science enables the U.S. to maintain its competitive edge by funding science that can transform our energy future, supports our national security and seeks to understand the fundamentals of matter and energy itself.

To do this the Department of Energy, and the Nation as a whole, need extraordinary scientific and technical talent on a scale to match our competitor countries. However, the Nation's ability to create sufficient talent has eroded. The National Academy of Sciences' "Rising Above the Gathering Storm" report confirms the vital role that a highly skilled technical workforce plays in an innovation economy such as the United States', but warns that the U.S. has not done enough to prepare our next generation of technical workers for careers in the new global economy.

The Office of Science is prepared to help address this challenge. Each year, hundreds of thousands of students of all ages – from kindergarten to mid-career scientists – have participated in the educational and workforce development programs sponsored at our laboratories (see page 16). These students could become the core of the Nation's future technical workforce. However, a coherent, overarching strategy is necessary to maximize the efficiency and impact of our programs.

The strategic plan presented in this document provides this overarching strategy. Our programs are aimed at boosting teachers' content knowledge and improving student achievement in science and mathematics. Our programs provide students with opportunities to experience real science, first hand. These programs reach students at all educational levels and span all social, racial, economic, and geographic backgrounds.

Four primary strategic areas have emerged from our planning process. Each area focuses on a different part of workforce development: educators, students, workers, and the building of program capacity.

This document outlines an ambitious approach to workforce development, one that we hope will create a larger, more diverse, and highly skilled pool of scientists, engineers, and technically skilled workers.

As Under Secretary for Science, I am dedicated to keeping the U.S. in its position of intellectual leadership.

Raymond L. Orbach, Under Secretary for Science
U.S. Department of Energy
The Office of Science Future Workforce Strategy



Dr. Raymond L. Orbach visiting with students

National Goal

The Office of Workforce Development for Teachers and Scientists will prepare a diverse workforce of scientists, engineers, and educators to keep America at the forefront of innovation. The Department of Energy will utilize its unique intellectual and physical resources to enhance the ability of educators and our Nation's educational systems to teach science and mathematics.

“One must learn by doing the thing; for though you think you know it, you have no certainty, until you try.”

– Sophocles

Experiential learning opportunities are the foundation upon which DOE's science, technology, engineering, and mathematics (STEM) education initiatives are built. The Department's 17 national laboratories offer students and educators an unparalleled opportunity to improve their understanding of science and to develop their ability to reason scientifically through direct experience.

We recognize that the Department of Energy is just one of many institutions that have an important role in STEM education reform. The enormous challenges confronting the U.S. educational system cannot be resolved unless the Department focuses its resources on its unique capabilities and works in partnership with other organizations to leverage resources, particularly other Federal mission agencies that share a need to develop a highly qualified STEM workforce.

This is why we focus on experiential learning opportunities at DOE's national laboratories. Hands-on research experiences supported by senior scientist mentors have been demonstrated to influence a student's ability to succeed in the classroom and the workplace. In addition, students are more likely to pursue careers in areas where they have had a positive experiential learning opportunity because these experiences provide students a unique opportunity to immerse themselves in world-class mentored research with scientists and engineers in a laboratory environment.

Vision

WDTS' vision is a future where a student would write the following essay:

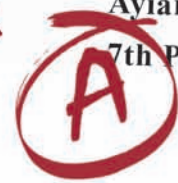
American History

May 24, 2027

*Good Summary!
Things have really changed.*

Ayiana

7th Period



America's Workforce 2007-2027

In 2027, the United States remains at the forefront of global innovation and competitiveness because of its core strengths in science and technology (S&T). The transformation of America's workforce has been critical to that success story. Compared to the workforce of 2007, today's workforce is more diverse and more science literate. The workforce of 2027 has the skills required to succeed in the rapidly changing and complicated world that has emerged and provides a foundation that enables the U.S. to compete effectively with any other nation in areas of industrial innovation.

The transformation of the U.S. scientific and technical workforce over the past twenty years can be tied to several key factors.

First, the Nation realized in 2007 that greater resources needed to be devoted to S&T education and workforce development. This required not just resources from the Federal government, but also those of industry. Corporate America increased efforts to train its own workforce; supplying support for our Nation's schools and universities. Partnerships between the government and private corporations brought the strengths of both sectors into classrooms across the country.

Second, the Federal government demonstrated strong leadership and commitment to science, technology, engineering, and math (STEM) education.

Third, scientists, engineers, and mathematicians became the new celebrities of their generation. K-12 students pursuing and excelling in math, science, and engineering were viewed as equals to high school athletic stars because they brought fame and resources to their schools. Global science and math competitions showed how much U.S. students had improved, particularly when the U.S. swept the International Science Olympics in 2024.

Finally, there was a revolution in how science and technology was taught in U.S. classrooms. Educators of science, math, and engineering now teach using knowledge that they learned from hands-on experiences working in forefront science laboratories. America's classrooms are now linked to our Nation's public and private laboratories. This required students to be more creative, more innovative, and to do more critical thinking. Students didn't just learn about science, they experienced it and made strong contributions to our Nation's economic competitiveness.

Operating Principles

The Office of Workforce Development for Teachers and Scientists (WDTs) creates and implements world-class, hands-on opportunities for students, educators, and scientific and technical professionals. We adhere to the same professional management and ethical standards expected of all Office of Science programs. In addition, every undertaking will be:

- Consistent with DOE's missions;
- Competed openly and available to all qualified applicants;
- Peer reviewed and rigorously evaluated for excellence;
- Open to the possibility of partnerships;
- Developed to its full potential; and
- Sustained and adaptable to meet the Nation's long-term needs.



Priorities

The Department of Energy, as part of the American Competitiveness Initiative (ACI), has the responsibility to encourage American innovation and strengthen the Nation's ability to compete within the global economy. A primary focus of the ACI is to improve the science and math educational system in the U.S.; an enormous undertaking involving 51 million K-12 students in 15,400 school districts located across the country.

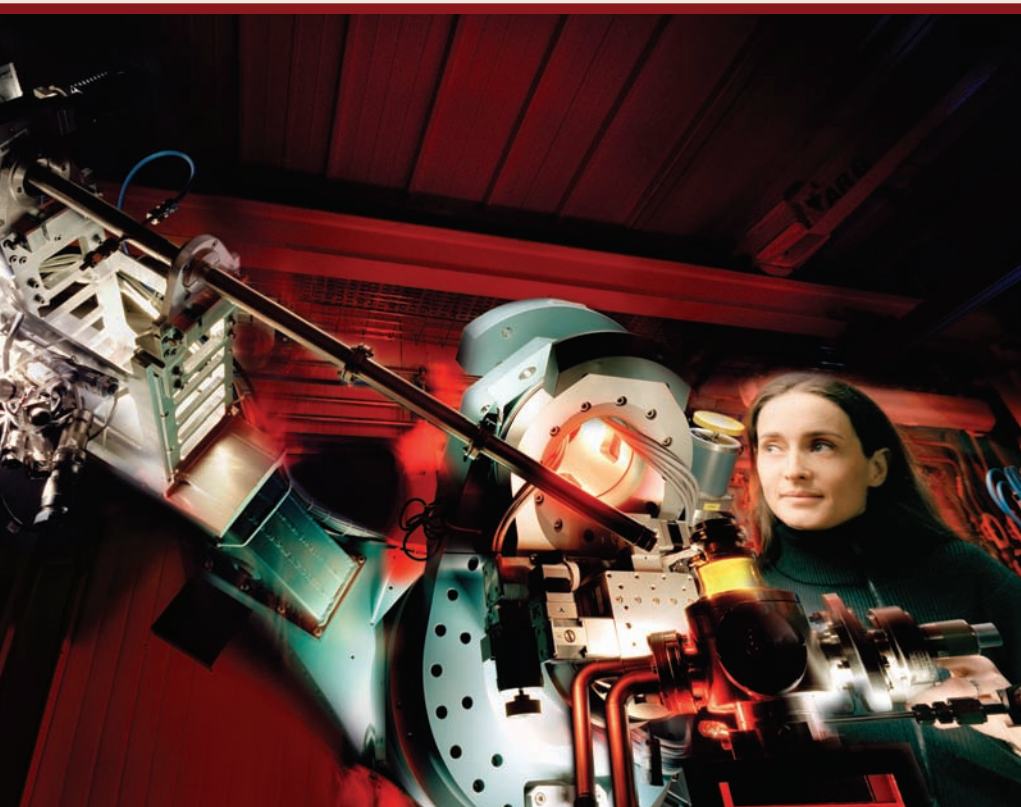
Given the scale and scope of the challenge (see page 14), the Department of Energy must prioritize its efforts. We cannot immediately influence all of the 1.7 million science and math K-12 educators in the country, but we can begin to develop a cadre of science educator leaders in individual school districts who can bring to their classrooms new resources and teaching techniques. We cannot reach every one of the 6.6 million students who attend one of the

Nation's 1,171 community colleges, but we can work with industry and our national laboratory leadership to identify the key technical skill gaps that could be filled by an expanded DOE community college program.

Making an impact in STEM education requires WDTs and the Department of Energy to identify a set of priorities to guide our strategic planning efforts. The following priorities influence our investment decisions and shape the creation

of programs and business plans to ensure that the Department and the Nation have a diverse and well educated population from which we can draw the human capital we need to meet our energy, environment, and security needs. Those priorities are:

- Enhance the capability of mathematics and science educators to boost student achievement in science and math and provide a rich learning experience for students.
- Expand participation of women and under-represented groups in the United States' science-driven innovation system.
- Develop and support programs for students who wish to pursue S&T careers at every step of the learning process.
- Work within an interagency framework to help identify the appropriate roles and responsibilities for Federal science and technology mission agencies in STEM workforce development, communicate these roles to all DOE stakeholders, and catalyze the implementation of DOE's roles.



Strategies & Program Areas

The Office of Science, through the Office of Workforce Development for Teachers and Scientists (WDTS), supports the Department of Energy's corporate human capital strategies by focusing on the scientific, technical, engineering, and mathematics (STEM) workforce needs of the Department.

DOE's Strategic Plan, Goal 5.2, states: *"Ensure that DOE's workforce is capable of meeting the challenges of the 21st Century by attracting, motivating, and retaining a highly skilled and diverse workforce to do the best job."*

WDTS, in consultation with our key stakeholders, has developed four Strategies designed to meet the Department of Energy's future STEM workforce needs: Educators, Students, Workforce Development, and Program Capacity. WDTS will work with all other Department of Energy program offices to ensure that the Strategies described in this Plan will be implemented in a manner that benefits all of DOE. Those Strategies are:

- The *Educator* Strategy that primarily focuses on middle school, high school, community college and undergraduate educators.
- The *Student* Strategy directly addresses middle school through undergraduate students.
- The *Workforce Development* Strategy that impacts the workforce available to the Department of Energy.

- The *Program Capacity* Strategy that provides WDTS with the capability to implement world-class programs, with a focus on rigorous program evaluation.

Each of the four WDTS Strategies contain Program Areas that address critical STEM workforce needs identified by the stakeholders who participated in WDTS's focus groups in January 2007 (for a list of these stakeholders, see pages 18-20). These 24 Program Areas should be viewed as either existing programs managed by WDTS, or programs that our stakeholders recommended be implemented to fill gaps in DOE's current capabilities. WDTS stakeholders agreed that a centrally managed program at DOE, which provides consistent program guidance, funding and evaluation, would be of high value to them.

WDTS, working with our stakeholder community, has developed specific business plans designed to implement the 24 Program Areas identified in this Strategic Plan. Those business plans will focus on the resources needed to achieve a national impact for our programs, the goals we will achieve through our investments, a

timeline for success, and a rigorous evaluation program to track our progress.





“If we don’t step up to the challenge of finding and supporting the best teachers, we’ll undermine everything else we are trying to do to improve our schools.”

Louis V. Gerstner, Jr.
Former Chairman, IBM

Educators:

The expected outcome is highly qualified educators who are able to teach at the highest standard, excite students about science, and improve the Nation’s capabilities in science, technology, engineering, and mathematics education.

Educators

We believe that the Department of Energy possesses remarkable resources that should be made available to students and educators throughout the country. We also recognize that educational leadership is vested in states and local communities. For this reason, we have designed our Strategies to augment local and state resources by making available to them the world-class intellectual and physical assets of the Department. This collection of assets will benefit students and educators alike.

The grasp of the subject matter educators teach is the most important component of student success in STEM fields. For years, educators have acquired valuable experience working with research teams within our national labs.

In our summer programs for educators, senior DOE scientists act as mentors for educators and continue to communicate with the educators long after the programs have ended. These research-based experiences provide educators with an enhanced ability to teach science and to act as model teachers in their home school districts.

To enhance the capabilities of the Nation's educators, WDTS programs should:

- Develop a diverse cadre of middle school and high school Master Science Educators with research experience to teach the methods of science to a broad audience and provide mentorship to other educators and students.²
- Foster mentoring between scientists and educators at DOE national laboratories,

establishing uniform expectations among mentors, protégés, and senior management.¹

- Increase institutional capacity for math and science education at minority-serving institutions, community colleges, non-research universities, and universities that focus on the development of K-12 educators.²
- Develop an adjunct K-16 educator program at DOE's

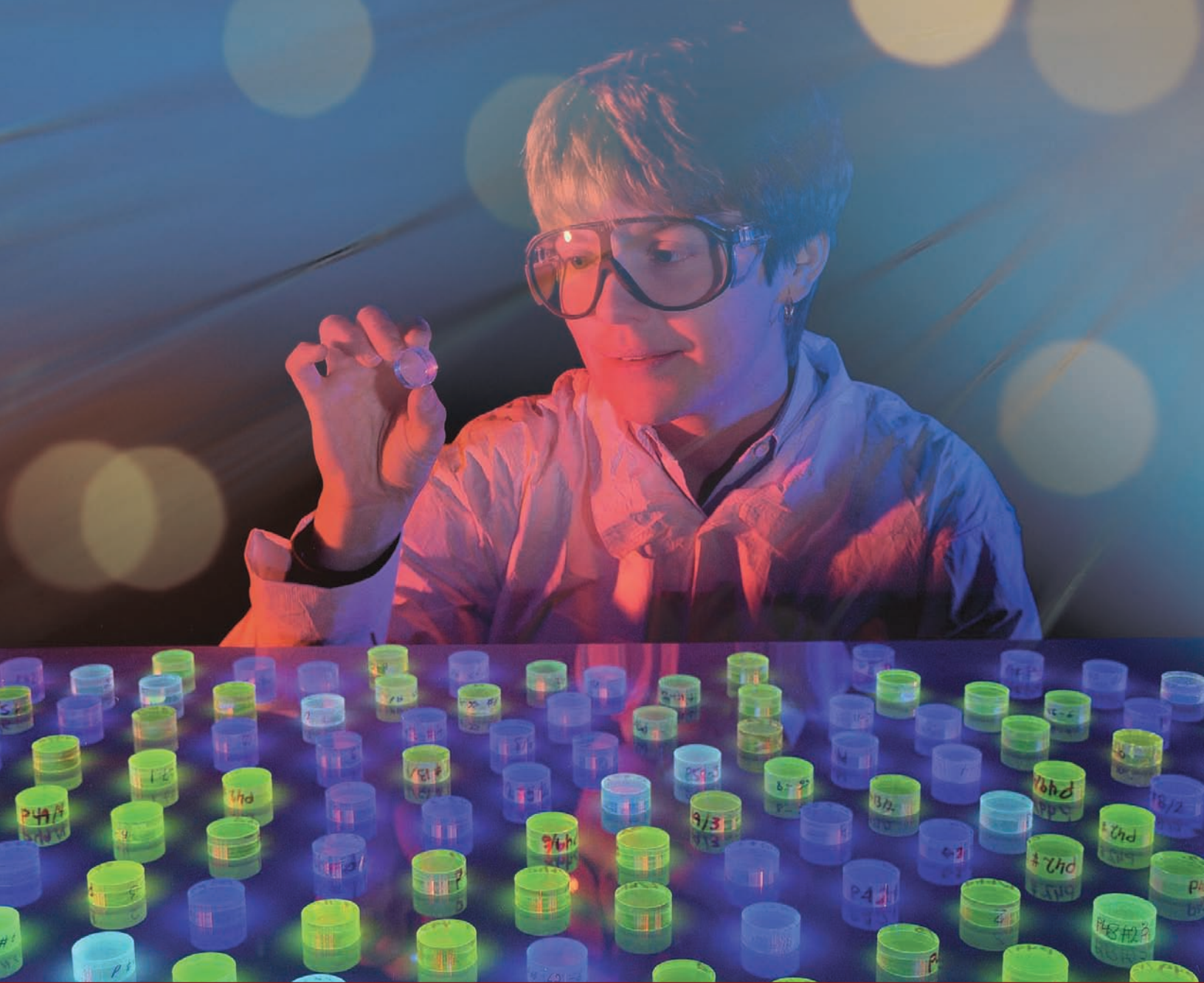
national laboratories, in cooperation with the U.S. Department of Education.¹

- Recognize educators, scientists, and engineers for outstanding contributions to STEM education.¹

¹ Implementation of this strategy requires the future development of new programs.

² WDTS currently implements this strategy with an existing program. Refer to page 15 for a list of existing WDTS programs.





“A Raytheon survey of American middle schoolers found that most of them would rather clean their rooms, eat their vegetables, take out the garbage, and go to the dentist than sit down with their math homework.”

William H. Swanson
Raytheon Chairman and CEO

Students:

The expected outcome is a greatly expanded, more knowledgeable, and more diverse population of skilled scientists, engineers, and mathematicians.

Students

Our programs emphasize the experiential learning model. Experiential learning, especially involvement in research activities, helps students develop a rich understanding of how data, conjecture, and experimentation combine to make scientific discovery. Experiential learning not only enhances student understanding of science, but academic research and our own experience with these types of programs strongly indicate that hands-on research experiences with mentor scientists also increases student interest in pursuing STEM careers.

The Department of Energy's mission areas touch on many of the important issues that will shape the future of this country. Involving students in these areas will help to communicate our missions to society at large. In addition, research programs will allow us to encourage students to develop skills critical to our Nation's future. This cadre of students will supply a pool of talent from which DOE national laboratories and the Federal government can recruit STEM professionals.

Groups that are currently under-represented in the STEM workforce will make up increasingly significant segments of our population. Currently, community colleges serve many students from these under-represented groups, who are often unsure about their future career choices. As a result, programs that reach students at these institutions may tap an underdeveloped source of candidates for STEM employment.

Programs like the National Science Bowl® – which has been in existence for 18 years and is a highly competitive event that tests a student's knowledge of physics, chemistry and other areas of science - encourage

students to pursue the study of science and technology and provide rewards for the achievement of excellence in these fields. In addition, these competitions send a message to society that science and technology are valuable and that students should be encouraged to involve themselves in these disciplines.

WDTS programs will bring together students who share a common interest in STEM fields and will reach out to students who have not traditionally participated in our programs. These programs will foster the development of networks linking students, reinforcing their interest in science and mathematics.

To address the needs of students, WDTS programs should:

- Increase opportunities to involve middle school, high school, and undergraduate students in experiential learning related to the global challenges facing their generation. These include research and workplace-oriented science, engineering, and math experiences in collaboration with DOE national laboratories, industrial partners, Federal agencies, and university collaborators.²

- Develop a community college program that aids students in making the transition to a STEM career and increases the pool of qualified technical staff available to the national innovation system.²
- Develop an undergraduate research-based fellowship program that encourages students to work at DOE national laboratories or within the Federal government.¹
- Build a network among participants with Federal government research experience and/or laboratory fellowship programs to facilitate sharing of experiences, establish opportunities for collaborative learning across educational fields, and encourage peer mentoring.¹
- Promote opportunities to recognize world-class science, math, and engineering excellence demonstrated by middle school and high school students in the United States.²

¹ Implementation of this strategy requires the future development of new programs.

² WDTS currently implements this strategy with an existing program. Refer to page 15 for a list of existing WDTS programs.



“If there are not enough trained people in the U.S., corporations will have to move R&D operations to countries where the trained people are. The pilot plant follows, because you need the R&D people nearby to help make it work. The manufacturing plant follows the pilot plant. Distribution, sales, and management follow the manufacturing. Once this process is started, it is not reversible. Corporations may not like it, but they will survive if there is no R&D in the U.S. The U.S. economy, however, will not recover from the loss of this business.”

Bill Joyce
CEO of Hercules, Incorporated

Workforce Development:

The expected outcome is a sustained talent pool available to DOE’s national laboratories, the Federal workforce, industries and universities.

Workforce Development

A skilled scientific and technical workforce is essential to meeting the challenges facing the Department and our Nation in the 21st Century. As many of the Department's current employees near retirement, talented individuals must be recruited to take their places. Although many of these professionals will be drawn from the general STEM workforce, the Department's specific technical needs may not be widely available within this population.

We will develop and maintain internship and mentoring programs needed by the Department's research programs. In addition, we will recruit professionals and students with skill sets needed by the Department. We will also create programs to develop future scientific and technical professionals with skills critical to the Department's mission areas, such as those related to nuclear technologies, which are not being addressed by our Nation's colleges and universities.

WDTS should:

- Identify STEM workforce development needs for DOE mission areas by working and planning cooperatively with all DOE R&D programs.²
- Address the challenge of an aging workforce at the DOE national laboratories by developing a succession planning program, which relies on mentoring and hands-on experiences, to ensure that critical technical expertise is maintained.¹
- Support targeted educational and training programs to increase the number of students

and professionals pursuing fields of interest to DOE.¹

- Create graduate and post-graduate fellowships to address specific DOE national laboratory technical requirements.¹
- Create professional and management internships modeled after the Atomic Energy Commission Fellowship Program.¹
- Work with DOE R&D programs to create discipline-focused opportunities for teachers and students that

support science, math, and technology-related fields of importance to DOE.¹

- Build upon the unique mission role DOE has in the energy field and specific fields of science and technology (physical sciences, computation, biology, mathematics, etc.).¹

¹ Implementation of this strategy requires the future development of new programs.

² WDTS currently implements this strategy with an existing program. Refer to page 15 for a list of existing WDTS programs.





“Second only to a weapon of mass destruction detonating in an American city, we can think of nothing more dangerous than a failure to manage properly science, technology, and education for the common good over the next quarter-century.”

The U.S. Commission on National Security/21st Century,
February 2001, commonly referred to
as the “Hart-Rudmann Report”

Program Capacity:

The expected outcome is a world-class DOE STEM workforce development program that is able to help sustain the Nation’s needs for decades to come.

Program Capacity

WDTS must maximize the impact of its programs to meet the Nation's STEM workforce needs. We will partner with Federal agencies, universities, the private sector and other stakeholders to define and implement a clear role for the Department of Energy in STEM education. Clearly defined expectations will allow us to develop the appropriate scope for our programs. To the extent that resources are provided through Federal funding, private funding, in-kind donations, and other sources, we will scale our programs to broaden their reach consistent with STEM workforce needs.

Our experiential learning activities are an outgrowth of the unique strengths of the Department: its national laboratories, illustrated by our numerous undergraduate laboratory internships; our university partners, as seen with Faculty and Student Teams; and our corporate sponsors, most clearly demonstrated in the sponsorship of the National Science Bowls.

Our programs will build on effective practices that have demonstrated success and will implement innovative practices that are informed by cutting-edge research. WDTS will sponsor independent external reviews of its programs on a regular basis to ensure that these best practices and uniform expectations will be established for all of our programs.

The experiential nature of our programs will require a new approach to program evaluation, one that is grounded in best practices and sound academic research. We firmly believe that the success of our programs can be measured and that these evaluations

should be done using best current practices identified by the educational community.

In summary, WDTS programs should:

- Partner with industry, academic institutions and associations, and Federal agencies to leverage resources and expertise in workforce development programs.¹
- Increase the capacity of DOE national laboratories to serve as a resource base for educator and student development, especially for women and under-represented populations.¹
- Identify and implement highly effective delivery methods, with proven track records of success, for Federal and national laboratory STEM workforce programs.¹
- Develop and employ rigorous evaluation methods for every WDTS program.²
- Serve as the analytical resource for the Department of Energy's

STEM workforce efforts through the development of longitudinal workforce studies that track students and educators who participate in DOE programs. The results of these studies will focus resources on key transitions that influence the decisions of students regarding science and technological careers.²

- Improve outreach efforts through a “trusted partners” model to more effectively include women and under-represented populations in DOE's STEM workforce development programs.¹
- Work within the Department of Energy and with other Federal science and technology mission agencies to articulate the appropriate roles and responsibilities for Federal STEM education efforts.¹

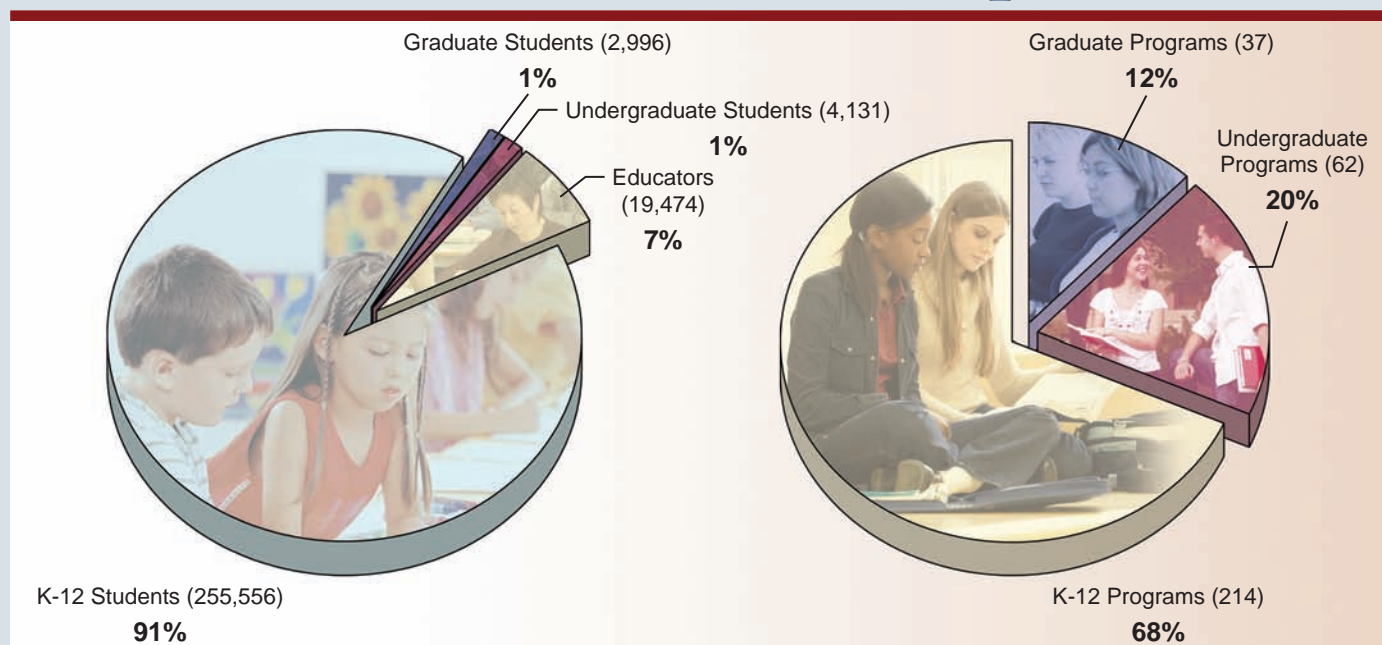
¹ Implementation of this strategy requires the future development of new programs.

² WDTS currently implements this strategy with an existing program. Refer to page 15 for a list of existing WDTS programs.

United States Education Infrastructure

K-12		Higher Education	
Number of Public School Students	48,132,518 ¹	Number of 4-year Colleges and Universities	2,533 ⁴
Number of K-12 Students	51,610,806 ²	Number of 4-year Undergraduate Students	10,726,181 ⁴
Number of School Districts	15,397 ¹	Number of STEM Undergraduate Students	~400,000 ¹
Number of Elementary Schools	95,201 ²	Number of Graduate Students	2,157,000 ³
Number of Secondary Schools	38,161 ²	Number of STEM Graduate Students	~100,000 ¹
Number of Public Schools	94,112 ²	Number of Schools of Education	1,206 ⁵
Number of Teachers	3,044,012 ¹	Number of Pre-Service Teachers	106,300 degrees awarded (2001)
Number of STEM Teachers	1,700,000 ¹	degrees awarded (2003) ³	
Number of 504/IEP Students	6,727,000 ³	Number of Community Colleges	1,683 ⁴
Number of Charter Schools	1,010 ⁴	Number of Community College Students	6,545,863 ⁴
% of Public Schools with Internet Access	99% ⁴		
Number of Title I Schools	8,770 ⁴		

DOE Education Enterprise



¹ Augustine, N.R. et al (2007) "Rising Above the Gathering Storm Report" National Academies of Science, Washington, DC.

² Center for Education Reform "K-12 Facts" <http://www.edreform.com/index.cfm?fuseAction=section&pSectionID=15&cSectionID=97> Accessed 23 July 2007 (Specific sources listed at bottom of website).

³ Rooney, P. et. al. (2006) "The Condition of Education 2006" National Center for Education Statistics, Washington, DC.

⁴ Snyder, T.D. (2005) "Digest of Education Statistics" National Center for Education Statistics, Washington, DC.

⁵ Levine, A. (2005) "Educating School Teachers" The Education Schools Project-Columbia University Schools of Education Research Project, New York, NY.

Current DOE Workforce Development Programs

Over a quarter of a million students, graduate students, and educators participate in programs at Department of Energy national laboratories each year. Programs funded by WDTS – such as the Science Undergraduate Laboratory Internships (SULI), the Community College Institute (CCI), the DOE Academies Creating Teacher Scientists (DOE-ACTS), the Pre-Service Teacher internships (PST), and the National Science Bowls – at the national laboratories play a distinctive role in engaging the next generation of scientists, mathematicians, and engineers in the science mission of the Department of Energy.

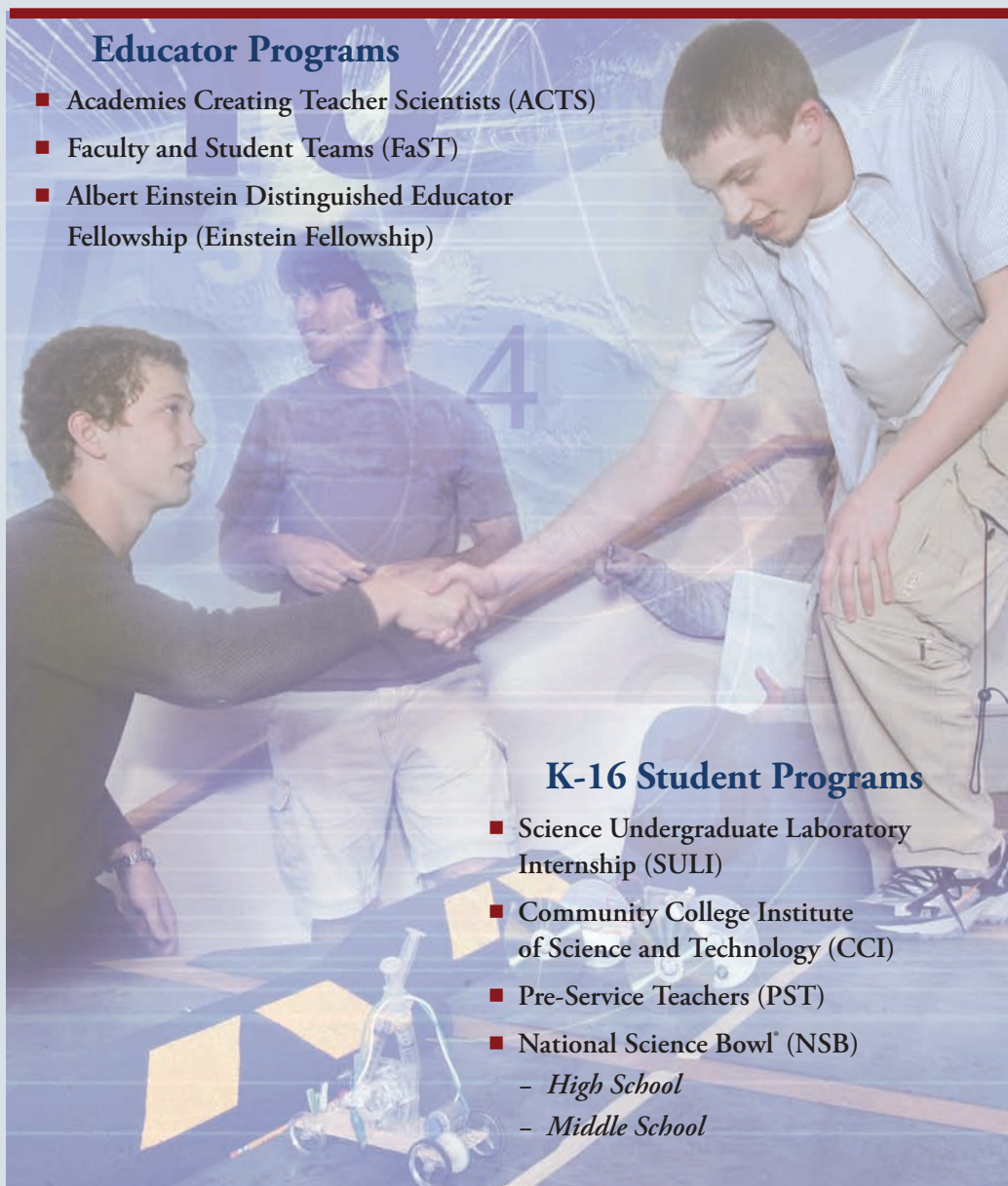
In addition, the laboratories collaborate with local educators, institutions, and industries to place scientists in schools, allow students to visit world-class research facilities, engage students with intriguing demonstrations and activities, and expand the scientific knowledge of educators and students alike. The DOE national laboratory system encourages our Nation's students to explore the research process through over 300 experiential opportunities and celebrations of excellence in science, mathematics, and engineering. These programs allow the national laboratories to showcase their scientific activities and encourage the next generation of scientists, engineers, and mathematicians to join the DOE in its endeavor to keep the United States at the forefront of innovation.

Educator Programs

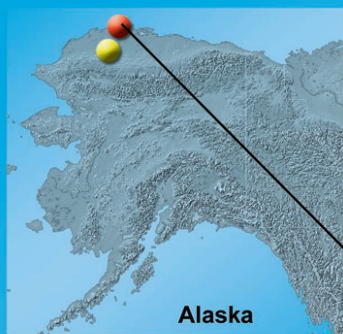
- Academies Creating Teacher Scientists (ACTS)
- Faculty and Student Teams (FaST)
- Albert Einstein Distinguished Educator Fellowship (Einstein Fellowship)

K-16 Student Programs

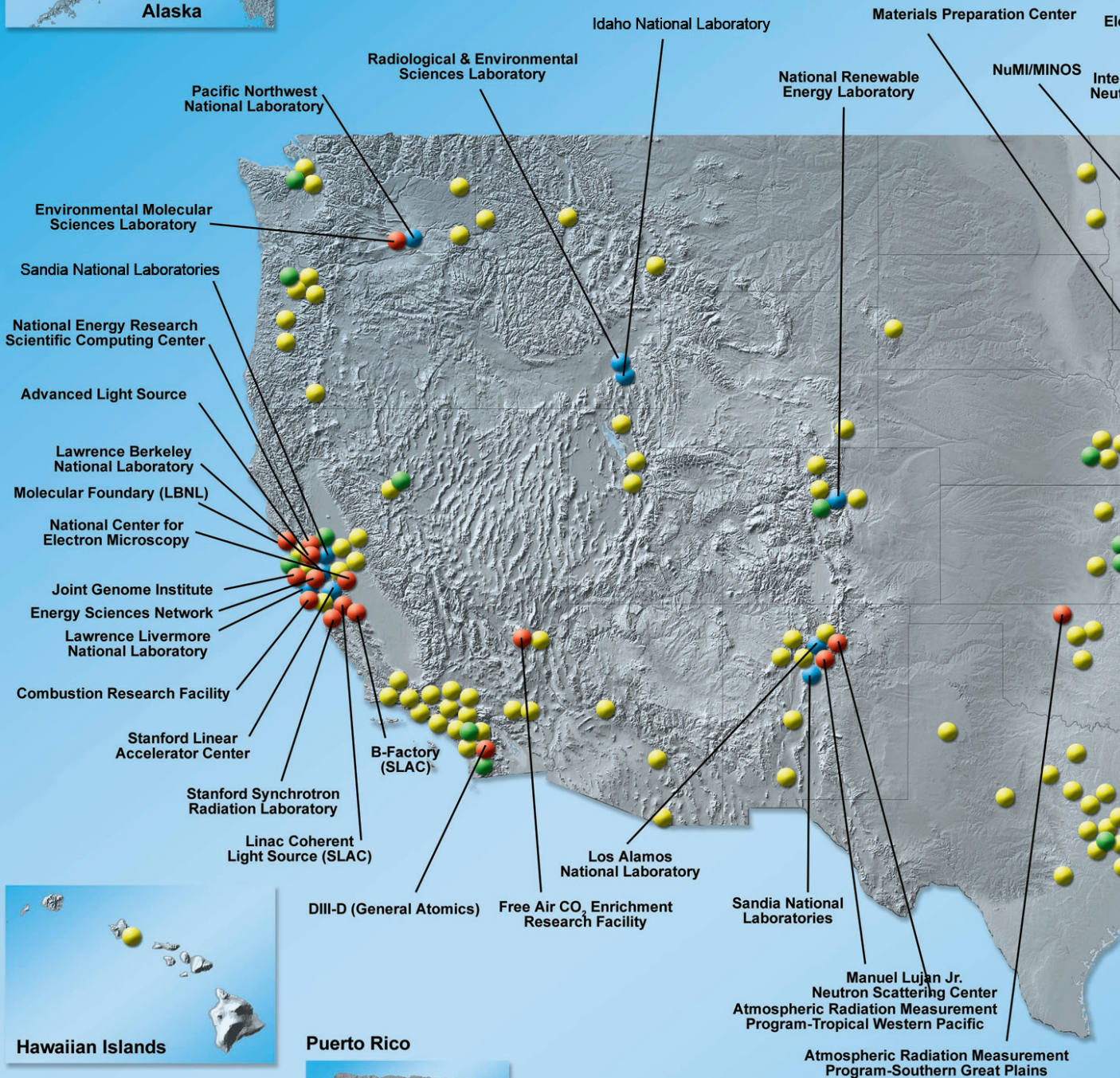
- Science Undergraduate Laboratory Internship (SULI)
- Community College Institute of Science and Technology (CCI)
- Pre-Service Teachers (PST)
- National Science Bowl® (NSB)
 - High School
 - Middle School



Our Presence . . .

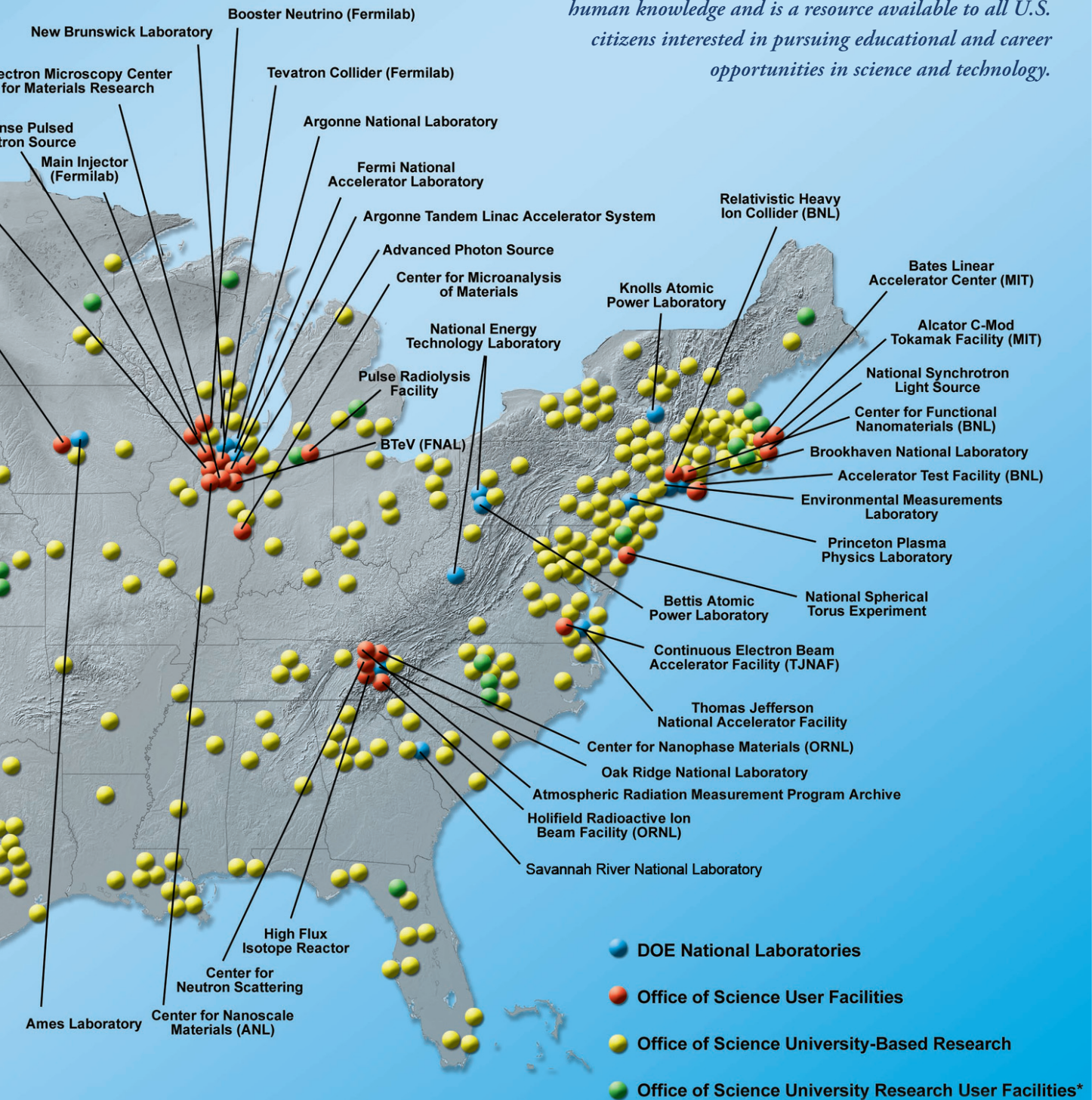


Atmospheric Radiation Measurement Program-North Slope



The Department of Energy's 17 national laboratories and more than 50 world-class scientific user facilities are extraordinary platforms that reach students and educators across the country. In addition, the Department provides grants to more than 300 major universities and has partnerships with thousands of businesses.

This scientific enterprise continually works at the frontiers of human knowledge and is a resource available to all U.S. citizens interested in pursuing educational and career opportunities in science and technology.



Stakeholder Focus Group Participants

During the month of January 2007, WDTs invited more than 110 individuals to nine focus group meetings. WDTs would like to extend its appreciation to all contributors for the constructive insights and perspective they provided.

Corporate America

Armbrrecht, Ross	Delaware Foundation for Science and Mathematics Education
Bunkley, Crawford	ExxonMobil Corporation
Butler, Diane	Lockheed Martin Corporation
Garrish, Ted	CH2M Hill
Knotts, Jim	Lockheed Martin Corporation
Loweth, Hugh	Southern Universities Research Association
Lydum, Bob	Agilent Technologies, Inc.
Niedzielski-Eichner, Phillip	TechSource
Rosen, Rich	Battelle
Wells, Kelli	GE Foundation
Zimmerman, Kristin	General Motors

DOE Laboratory Education Directors

Bardeen, Marge	Fermi National Accelerator Laboratory
Benson, Jeff	Idaho National Laboratory
Egenberger, Laurel	Lawrence Berkeley National Laboratory
Estes, Jeff	Pacific Northwest National Laboratory
Foster, David	Los Alamos National Laboratory
Gilliom, Laura	Lawrence Livermore National Laboratory
Howell, Cynthia	National Renewable Energy Laboratory
Karsjen, Steve	Ames Laboratory
McClure, Bruce	Sandia National Laboratories – NM
Myron, Harold	Argonne National Laboratory
Ng, Ray	Sandia National Laboratories – CA
Nowak, Michael	National Energy Technology Laboratory
Post-Zwicker, Andrew	Princeton Plasma Physics Laboratory
Smoak, Barbara	Savannah River Site
Stevenson, Wayne	Oak Ridge Institute for Science and Education
Tyler, Jan	Thomas Jefferson National Accelerator Facility
White, Ken	Brookhaven National Laboratory
Woods, Mike	Stanford Linear Accelerator Facility

DOE Program Offices – Education Contacts

Binkley, Steve	National Nuclear Security Administration
Clayton, Sean	Office of Human Capital Management
Friend, Donna	Office of Human Capital Management
Gutteridge, John	Office of Nuclear Energy, Science and Technology
Martinez, Joe	Office of Science
Runkle, Gene	Office of Civilian and Radioactive Waste Management
Whatley, Annie	Office of Economic Impact and Diversity
Yarrington, Jeanette	Office of Health, Safety, and Security

Education Associations

Ablott, Vance	Triangle Coalition for Science and Technology Education
Barstow, Daniel	Technical Education Research Centers
Dibiase, Warren	Association for Science Teacher Education
Koch, Janice	Association for Science Teacher Education
Madewell, Steven	National Science Resources Center
McMurtray, James	National Alliance of State Science and Math Coalition
Milne, Henry	National Science Resources Center
Owens, Frank	National Science Teachers Association
Rubillo, James	National Council of Teachers of Mathematics
Stanley, Ethel	Association of College and University Biology Education
Wheeler, Gerry	National Science Teachers Association
White, Arthur	School Science and Mathematics Association

Educators

Burck, Liz	Kenai High School, Kenai, Alaska
Chiapetta, Carrie	Scofield Magnet Middle School, Stamford, Connecticut
Dilks, Jeffery	Ames High School, Ames, Iowa
Elverum, Amy	Crawford School, Minneapolis, Minnesota
Hartmann, Kevin	Farmington High School, Farmington, Connecticut
Reeves, Judy	Baldwin County High School, Daphne, Alabama
Shewmaker, Joe	Palm Beach County Schools, West Palm Beach, Florida
Wenstrom, LeRoy	Mississippi School for Mathematics and Science, Columbus, Mississippi
Wright, Brenda	Henniker Community School, Henniker, New Hampshire

Federal Agencies

Baker, Michael	Environmental Protection Agency
Bender, Belinda	Federal Aviation Administration
Crosby, Greg	Department of Agriculture
Dean, Jason	Department of Education
Fowler, Linda	Department of Labor
Fuchs, Bruce	National Institutes of Health
Guilbeau, Cheryl	NASA Marshall Academic Affairs Office
Hall, Chrissa	NASA Marshall Academic Affairs Office
Potter, Ginger	Environmental Protection Agency
Steffen, Peg	National Oceanic and Atmospheric Administration
Stubenrauch, Christie	Department of Interior, Bureau of Indian Education
Suiter, Marilyn	National Science Foundation
Thompson, Keith	Department of Defense
Winterton, Joyce	National Aeronautics and Space Administration
Zeff, Ken	Department of Education

Office of Science, Program Offices

Chalk, Christine	Office of Advanced Scientific Computing Research
Crawford, Glen	Office of High Energy Physics
Elwood, Jerry	Office of Biological and Environmental Research
Freeburn, Don	Office of Basic Energy Sciences
Henry, Gene	Office of Nuclear Physics
Hitchcock, Dan	Office of Advanced Scientific Computing Research
Markevich, Darlene	Office of Fusion Energy Sciences
Seweryniak, George	Office of Advanced Scientific Computing Research
Thomassen, David	Office of Biological and Environmental Research
Vanek, Thomas	Office of Fusion Energy Sciences

Under-Represented Populations

Berger, Helena	American Association of People with Disabilities
Borelli, Elaine	Society of Women Engineers
Camacho, Judit	Society for Advancement of Chicanos and Native Americans in Science
Connolly, Virginia	Society of Women Engineers
Cushman, George	Hispanic College Fund
Etsitty, Carl	American Indian Science and Engineering Society
Horting, Karen	Society of Women Engineers
Koster, Janet Bandows	Association for Women in Science
Lewis, Ron	National Organization of Black Chemists and Chemical Engineers
Paz Montiel, Beatriz	Hispanic College Fund
Summers, Lauren	Science Education for Students with Disabilities
Walker, Marlon	National Association for the Professional Advancement of Black Chemists and Chemical Engineers

University and Professional Associations

Billy, Carrie	American Indian Higher Education Consortium
Budetti, Maureen	National Association of Independent Colleges and Universities
Chang, Amy	American Society for Microbiology
Chodos, Alan	American Physical Society
Gobstein, Howard	National Association of State Universities and Land-Grant Colleges
Hodapp, Theodore	American Physical Society
Kuslikis, Al	American Indian Higher Education Consortium
McCarthy, Brittny	American Association of State Colleges and Universities
McKenny, James	American Association of Community Colleges
Nemeth, John	Oak Ridge Associated Universities
Piercy, Craig	American Nuclear Society
Rankin, Samuel	American Mathematical Society
Salas, Gumecindo	Hispanic Association of Colleges and Universities
Smith, Tobin	Association of American Universities
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- Department of Energy Academies Creating Teacher Scientists (DOE ACTS)
- Faculty and Student Teams (FaST)
- Science Undergraduate Laboratory Internship (SULI)
- The National Science Bowl® for High School Students

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- The National Science Bowl® for Middle School Students
- The Pre-Service Teacher Program (PST)

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- The Albert Einstein Distinguished Educator Fellowship Program
- The Community College Institute (CCI)
- Program Evaluation and Monitoring

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- Used Energy-Related Laboratory Equipment (ERLE)



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